

SPAWAR



Documentation

Mandates

avy Digital Data Policy (ASN RDA)

“To achieve the goal of an integrated digital data environment [System Command Commanders] must convert existing hardcopy logistics technical data to digital form consistent with the DoD use of standards when a business case analysis supports the conversion as cost effective”

Congress: Paper Reduction Act Title 10



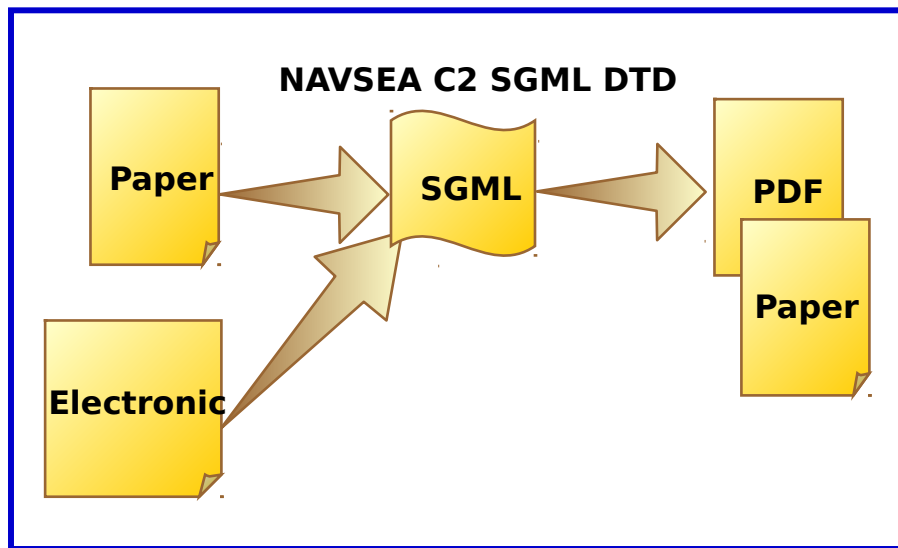
SPAWAR Corporate

Perspective

- **Currently over 7000 active publications managed**
- **Expect average shelf life of 5-15 years**
- **Must be able to deliver to users in a variety of formats**
 - Word, PDF, Paper
 - SGML (Submarine community is committed to this)
 - As data within software segments
- **An integrated approach must:**
 - Define a migration strategy that leverages new technology (XML)
 - Not move so rapidly that the huge investment in current technical data is left behind



Legacy Approach



- **Drawbacks**

- Difficulty managing data via a single integrated tool or process
- Difficult to serve data up in a web-enabled format
- Cannot integrate data into other applications
- Disconnected to training development cycle

Research

- **SPAWAR actively pursuing research into the business case for adopting and XML orient technical data strategy**
- **Considering all current activities within DoD and Navy for using XML to express technical data**
- **Conclusion - Use a “Spiral Migration” strategy:**
 - Enables maximum benefit for leveraging XML in the conversion of existing legacy documents
 - Is compatible with evolving documentation task-based approach while mitigating risks
 - Based on solid engineering principles: Quantitative analysis and risk prototyping via pilot development



Observations

- **No single DTD/schema can be right for all “documents”**
- **SGML offers no significant long term advantage over XML**
- **XML DTDs derived from legacy SGML are overly complex**
 - XML’s inherent modularity eliminates the need to have monolithic, complex document definitions
- **SPAWAR focus has been on legacy documents**
 - Examined the CALS IETM XML DTD
- **SPAWAR HI focused on “task-based” technical data**



Major Benefits of XML

- **XML vs SGML**

- Simplicity
- Optimization for Internet
- More Tools at Lower Cost
- Allows for Achieving IETM Functionality above Class 2 (Scrolling Hypertext)

- **XML vs HTML**

- Component Reuse
- Separation of Content from Presentation
- Powerful Linking Capabilities
- Can Move Towards Context / Task-based XML-format

Conclusion

- **Identified a spectrum of document markup:**

- Content Based: Markup by chapter, table and paragraph
- Context Based: Markup by usage context, such as a



Bottom Line

XML can be beneficial to both, and both kinds of XML technical data can be easily integrated.



Task-based Approach

- **Tasks are a context → task-based is a subset of context-based document markup**
- **Revolutionize technical data**
 - Tech data is “data”, and should be described by a model
 - Use XML to express technical data models
 - Incorporate the technical data (former documentation) into the software
 - Provide context for users to access the information
 - Task-based



Concerns with Task-based Approach

- **Approach requires a significant paradigm shift**
 - Will require both training and time to get it right
 - Requires adequate funding for reengineering content
 - Timeframe should be over next 5-10 years, in the meantime, we can't ignore our legacy
 - Cannot be expected to happen for all documents overnight
- **Success of approach depends on accurate understanding and anticipation of tasks**
 - A high risk/high reward proposition
- **Writing technical data to conform to a task-based structure is going to be expensive**



Concerns with Task-based

Approach

Revolutionizing technical data has implications for Quality Control

- How do we ensure that the data that reaches sailors is correct?
- The existing system is a result of lessons learned
 - It has specific documentation control requirements designed to ensure that data is accurate
- Managing technical data at a component level implies that quality control must have happened at that level as well, i.e. object CM.

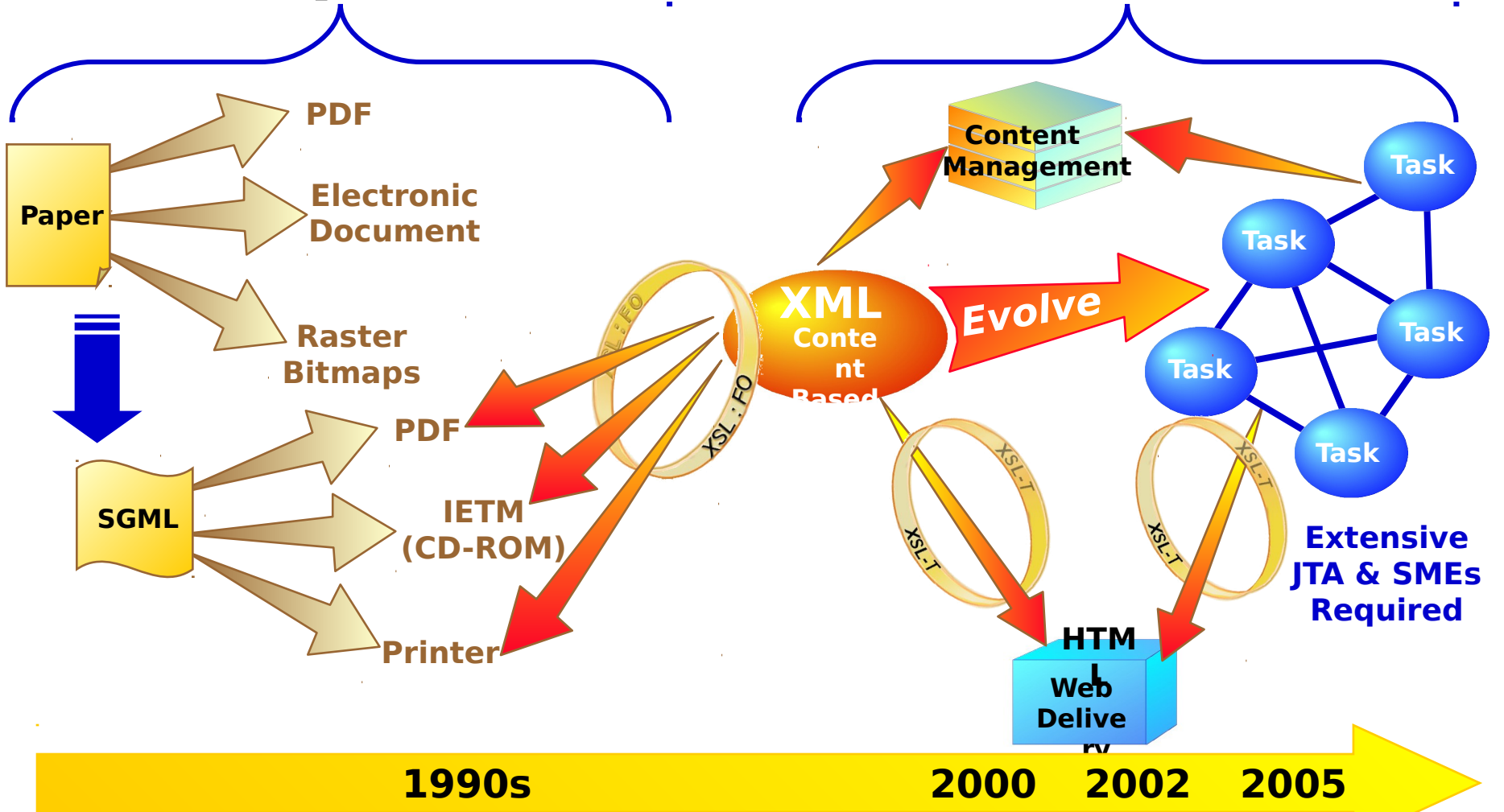
Bottom

Line

How will we know who has cognizance of released data? How will we corporately ensure that technical data is kept up to date? QA? CM?



Integrated Documentation Technical Roadmap

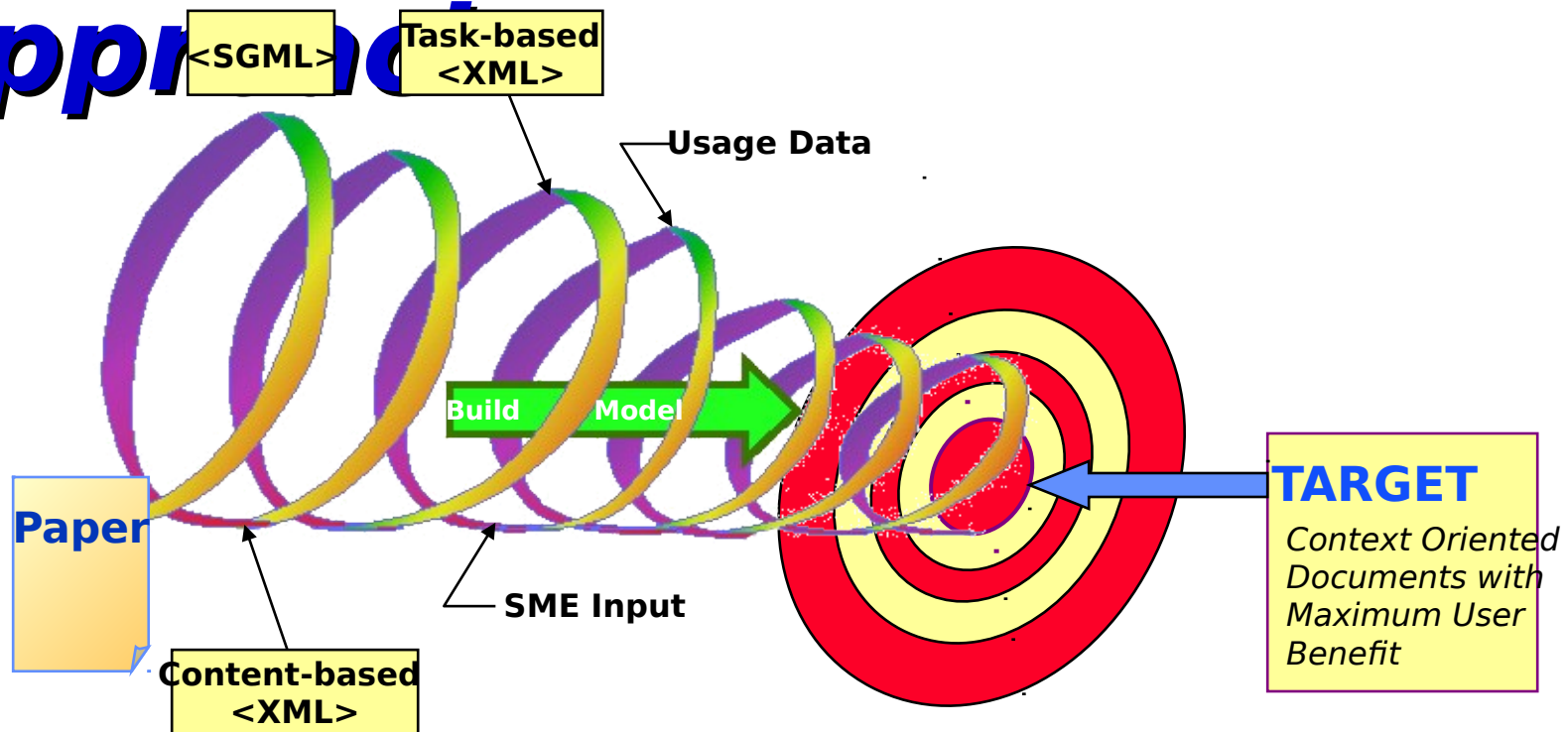


Spiral Approach

- **Allows a gradual migration and paradigm shift**
 - It cannot happen successfully without consensus and time
- **Spiral approach allows capturing feedback from users on how they are using documents**
 - Can accurately design a context model
 - Can evolve technical data based on pilot implementation

Spiral Evolutionary

Approach



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- **Why Evolutionary Approach?**

- Immediate benefits of accessing technical data via converting legacy documents to content based XML
- Accurately design context-oriented technical data based on user feedback and usage data to identify how the technical data is used
- Less costly and lower risk

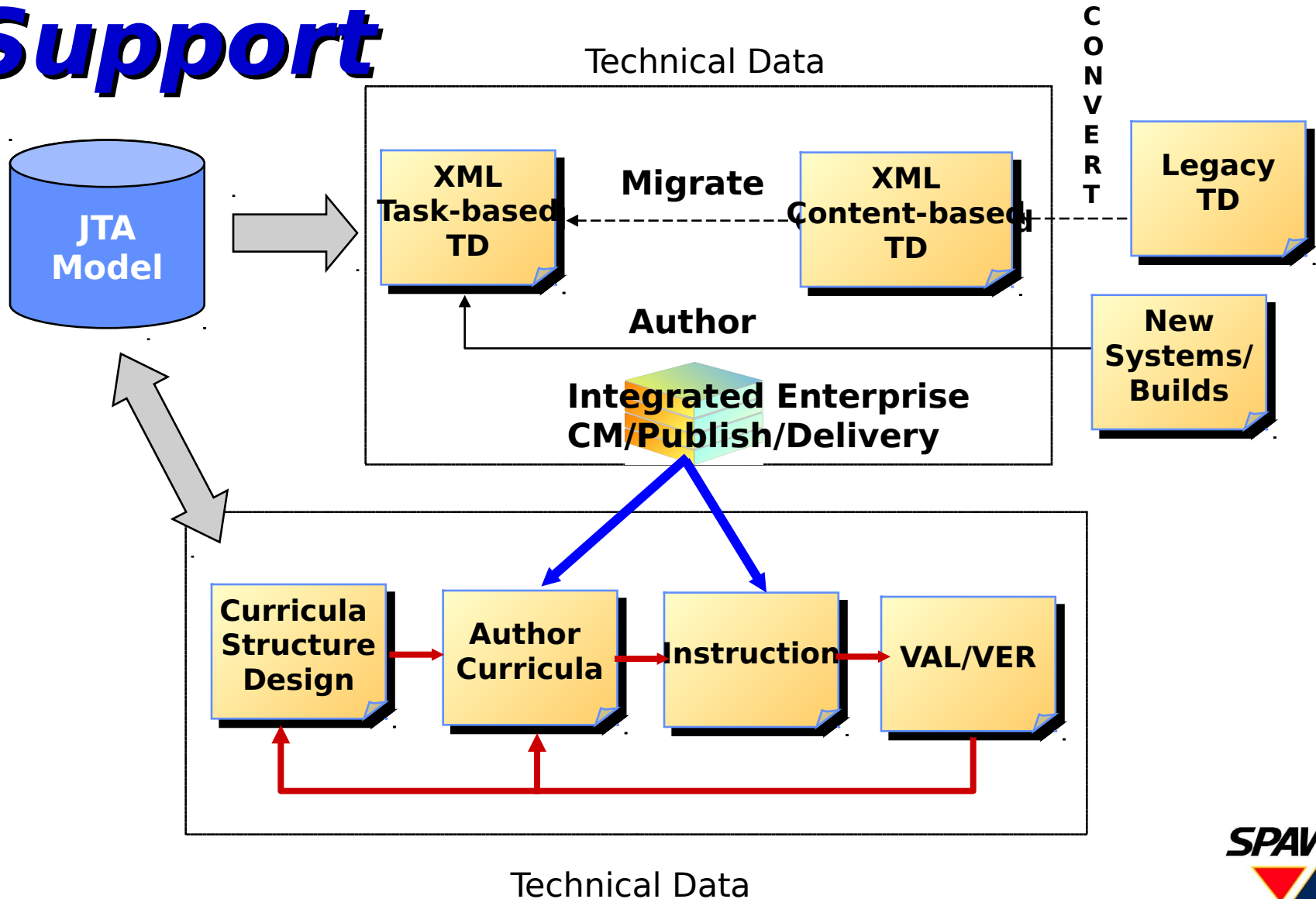


Job Task Analysis

- Is the fundamental model upon which task-based documentation and training must be based
- We cannot expect to get task-based technical model right without
 - A thorough, proven JTA model
 - The application of JTA is still in its infancy
- **Must: Continue to refine JTA via user input**
- **Must: Validate JTA concepts through controlled implementation of task-based technical data in a pilot environment**
- **Must not: Jump in with both feet and hope to get it right.**



Integrated Logistics Support



Current Activities

- **Content Management Tool Evaluation**
- **Developing Implementation Guidance**
- **Pilot Application**
 - SPAWAR On-line XML based virtual library (interface with Navy Virtual Library)
- **Demonstration**
 - Integration of XML technical data into supply 1348-6 requisition process



Tool Evaluation

- **Content Management and Web-Delivery System (CMWDS)**
 - Performed in-depth analysis of current state-of-the-art COTS tools
- **Initial research identified over 20 potential tools, of which 13 were selected for initial screening**
- **Four tools down selected for hands-on engineering in-house evaluation**
 - Conducted by independent developers
 - Fifth tool set added (**Content@XML**)



Key Performance

Parameter

Two Distinct Sets of Tools

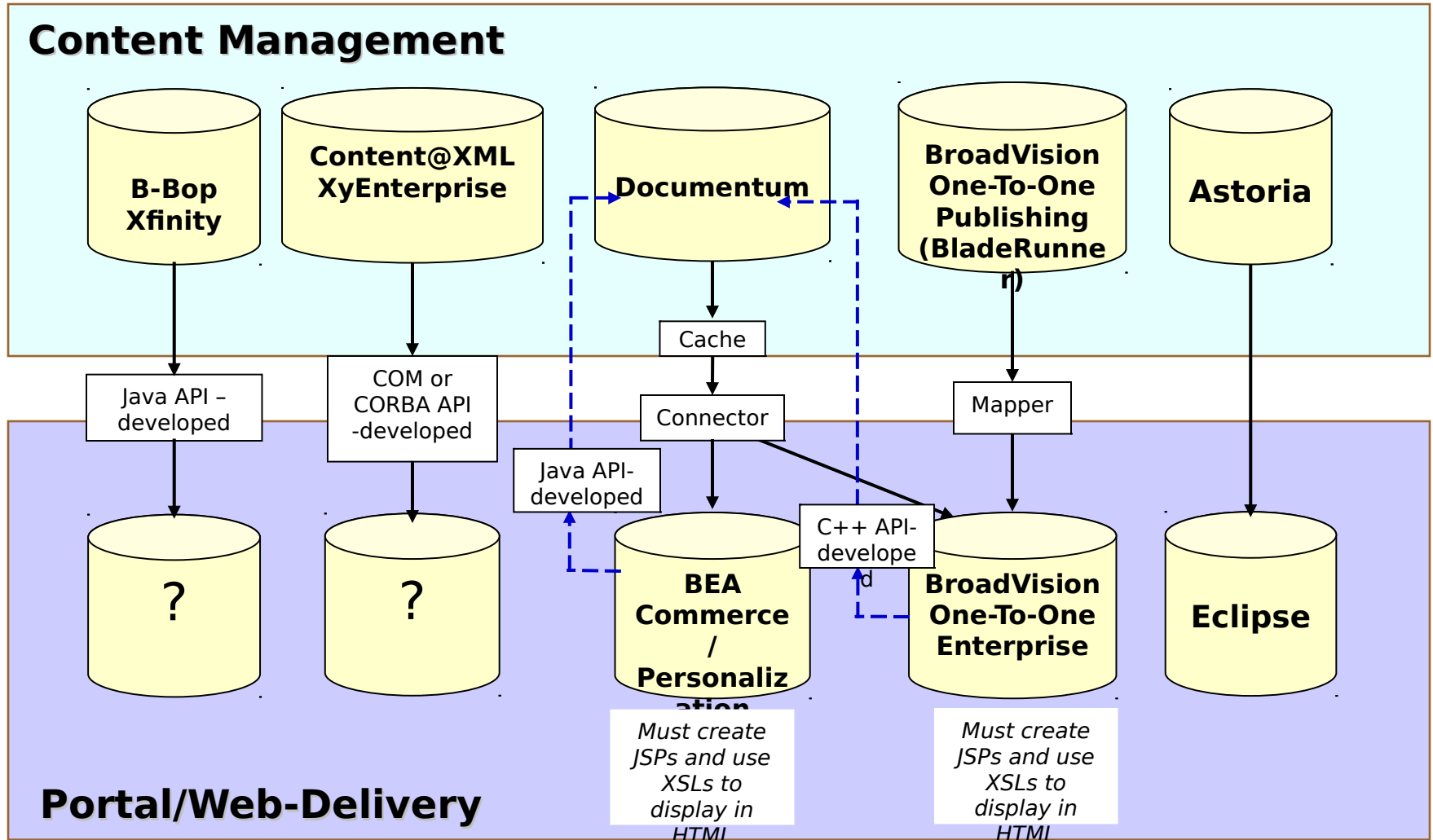
- **Content Management**

- Create and edit content
- Publish content to Portal
- Execute workflows
- Version CM/QA management

- **Portal / Web delivery capabilities**

- Web server for HTML access
- Personalization
- Data integration

In Depth Look



High Level Requirements

- **Support both XML and non-XML formats**
 - Create, manage and publish
- **User defined document management granularity**
 - Control overhead
- **Conformant to XML standards**
- **Workflow**
- **CMS publishing integrated with Portal web-delivery and personalization capability**
- **Easy to install, develop, and use**
 - Easy integration between CMS and Portal
 - “Out-of-box” capability
 - Remote content management and administration via browser



Selection

- **Selected Documentum CMS and BEA Portal**
- **Close race between Documentum / BEA and Broadvision (former Bladerunner) 1-To-1**
 - Key issue was integration between CMS and Portal (WD)
- **Distinguishing characteristics**
 - Integration of content management and web delivery systems
 - Web browser administration (local and remote)
 - Integration of distributed repositories
 - User-friendliness of the GUI and the XML document fragmentation process
 - XSLT implementation
 - Architectural flexibility and scalability of the content management system
 - Tracking and analysis of end user actions
 - Portal access and personalization

Forester and Gartner Group Also Selected Documentum as #1



SPAWAR CMWDS

Findings

CMS	Portal	Overall	Repository Formats	XML Decomposition	Reconstitution	Multi-Sourcing	Conversion/Publishing	Data Maintenance	Meta Data	Operation and Maintenance	Risk Factors
Documentum 4i Web Context Management (WCM) with BEA Commerce/Personalization Server	http://www.documentum.com	81	11.00%	11.00%	12.00%	6.60%	7.70%	11.00%	3.58%	8.69%	9.89%
BroadVision One-to-One™ Enterprise/Publishing	http://www.broadvision.com	80	11.00%	11.00%	12.00%	6.60%	11.00%	10.07%	3.58%	5.28%	9.17%
Chrystal Astoria/Eclipse	http://www.chrystal.com	63	11.00%	11.00%	9.00%	6.60%	4.40%	7.26%	2.48%	3.96%	7.19%
B-Bop Xfinity	http://www.b-bop.com	34	5.50%	3.74%	3.00%	4.40%	7.70%	0.94%	0.00%	2.31%	6.50%



Research Customized By: Forrester's View

VENDOR & PRODUCT	OVERALL SCORE	CAPABILITIES	INTEGRATION	PERFORMANCE ARCHITECTURE	RELIABILITY	SECURITY	CUSTOMER SUPPORT	MOMENTUM	COST
1. Documentum's 4i 4.2	3.2	3.7	1.8	2.7	2.1	1.9	4.3	3.5	3.0
2. Open Market's Content Server 3.1	3.1	3.4	2.7	3.9	3.0	0.5	3.4	3.1	2.0
3. Vignette's V/5 Suite 5.5	2.9	2.9	2.1	2.7	2.5	2.7	3.1	3.8	1.0
4. BroadVision's One-To-One Publishing 5.5	2.8	2.9	2.3	3.4	3.8	3.0	2.5	3.1	1.0
5. FileNET's Panagon WS 3.1, CS 5.1, WP 4.1	2.6	3.0	1.6	1.5	1.3	1.9	2.8	4.1	3.0
5. Interwoven's TeamSite 4.5	2.6	2.9	1.1	1.7	1.8	2.4	4.2	3.2	3.0
7. IntraNet Solutions' Xpedio 4.0	2.5	3.6	1.0	1.6	1.5	2.5	2.5	2.5	4.0
8. Eprise's Participant Server 3.0	2.3	3.1	0.6	3.7	1.8	2.6	2.5	2.4	3.0
9. Gauss Enterprise's VIP 5e	2.1	2.6	1.2	1.6	1.2	2.3	2.0	2.8	3.0
9.NCompass Labs' Resolution 3.1	2.1	2.6	1.2	3.2	0.7	2.3	2.6	1.8	5.0
11.worldweb.net's Expressroom I/O 2.0	2.0	2.6	0.7	1.4	2.0	1.5	2.3	2.1	3.0
12.eBT's engenda 4.5	1.6	2.2	0.1	1.3	0.9	1.5			



COTS Content Management and Web Delivery Systems Evaluation

Under Contract No. DAHC94-96-D-0003

Prepared for:

Space and Naval Warfare Command (SPAWAR)

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Documentation Summary

- **XML offers significant advantages over SGML**
- **Spectrum of Markup**
 - Content based → Suited for markup of traditional documents
 - Context based → Future of document markup
- **Migration to XML based document management**
 - Spiral evolution to reduce cost and mitigate risk
- **Tool Evaluation**
 - Both CMS and WD pieces must be considered
 - Evaluated Documentum CMS and BEA Portal as best of breed COTS tools
- **On-line virtual document pilot application**

